

CLAIMS

What is claimed is:

- 1 1. A method of adjusting one or more communications with a receiving unit in a
2 wireless communication network, the method comprising the steps of:
3 receiving feedback information relating to the receiving unit;
4 determining a feedback information offset for the receiving unit; and
5 adjusting the one or more communications with the receiving unit based on
6 the feedback information and the feedback information offset.
- 1 2. The method as recited in claim 1, wherein the receiving unit is a user
2 equipment, a base station, or a device communicating with multiple user
3 equipments.
- 1 3. The method as recited in claim 2, wherein the user equipment is a cordless
2 phone, cellular phone, satellite phone, pager, computer, personal data assistant
3 ("PDA"), entertainment device or wireless combined function device.
- 1 4. The method as recited in claim 1, wherein the feedback information
2 comprises an acknowledgement ("ACK"), a negative acknowledgement ("NACK"), a
3 channel quality indication ("CQI"), a discontinuous transmission ("DTX") bit or a
4 communication metric.
- 1 5. The method as recited in claim 1, wherein the feedback information offset is a
2 positive value whenever the feedback information for the receiving unit is
3 underestimated and a negative value whenever the feedback information for the
4 receiving unit is overestimated.

- 1 6. The method as recited in claim 1, wherein the feedback information offset
2 comprises an initial value of zero, a value based on the receiving unit, a value based
3 on a user profile associated with the receiving unit, a value based on historical data
4 or a value based on one or more conditions of the wireless communication network.
- 1 7. The method as recited in claim 1, wherein the feedback information offset is
2 not higher than a maximum value and is not less than a minimum value.
- 1 8. The method as recited in claim 1, wherein the feedback information offset
2 comprises a communication link adaptation feedback information offset and a
3 scheduling feedback information offset.
- 1 9. The method as recited in claim 1, wherein the wireless communication
2 network is a WCDMA network or a CDMA2000 network.
- 1 10. The method as recited in claim 1, further comprising the step of setting the
2 feedback information offset to an initial value.
- 1 11. The method as recited in claim 1, wherein the step of adjusting one or more
2 communications with the receiving unit based on the feedback information and the
3 feedback information offset comprises the steps of:
4 determining a load-based feedback information offset for the receiving unit;
5 and
6 adjusting one or more communications with the receiving unit based on the
7 feedback information, the feedback information offset and the load-based feedback
8 information offset.

1 12. The method as recited in claim 1, wherein the step of determining the
2 feedback information offset for the receiving unit comprises the steps of:

3 increasing the feedback information offset whenever the feedback information
4 includes a negative acknowledgement ("NACK"); and

5 decreasing the feedback information offset whenever the feedback
6 information includes an acknowledgement ("ACK").

1 13. The method as recited in claim 12, wherein the feedback information offset is
2 increased or decreased in uniform increments, predetermined increments, scaled
3 increments or calculated increments.

1 14. The method as recited in claim 13, wherein the increments depend on a fixed
2 value, a value based on the receiving unit, a value based on a user profile
3 associated with the receiving unit, a value based on historical data, a value derived
4 from feedback information received from the receiving unit or a value based on one
5 or more conditions of the wireless communication network.

1 15. The method as recited in claim 12, wherein the step of decreasing the
2 feedback information offset whenever the feedback information includes an
3 acknowledgement ("ACK") comprises the steps of:

4 leaving the feedback information offset unchanged whenever the feedback
5 information includes an acknowledgement ("ACK") and the feedback information is
6 not related to an initial transmission;

7 leaving the feedback information offset unchanged whenever the feedback
8 information includes an acknowledgment ("ACK"), the feedback information is
9 related to an initial transmission and a BLER is not greater than a desired value; and

10 decreasing the feedback information offset whenever the feedback
11 information includes an acknowledgement ("ACK") and the BLER is greater than
12 the desired value.

1 16. The method as recited in claim 1, wherein the step of determining the
2 feedback information offset for the receiving unit comprises the steps of:

3 increasing the feedback information offset whenever an actual number and/or
4 an average number of transmissions is less than a minimum limit; and

5 decreasing the feedback information offset whenever the actual number
6 and/or average number of transmissions is greater than a maximum limit.

1 17. The method as recited in claim 1, wherein the step of adjusting one or more
2 communications with the receiving unit based on the feedback information and the
3 feedback information offset comprises the step of scheduling the one or more
4 communications with the receiving unit using the feedback information and the
5 feedback information offset.

1 18. The method as recited in claim 1, wherein the step of adjusting one or more
2 communications with the receiving unit based on the feedback information and the
3 feedback information offset comprises the step of adapting one or more
4 communication links with the receiving unit using the feedback information and the
5 feedback information offset.

1 19. The method as recited in claim 17, wherein the one or more communication
2 links are adapted by changing a data rate, a channel modulation or a power level for
3 the one or more communication links.

1 20. The method as recited in claim 1, wherein the step of adjusting one or more
2 communications with the receiving unit based on the feedback information and the
3 feedback information offset comprises the steps of:

4 determining whether adjust the scheduling of the one or more
5 communications with the receiving unit using the feedback information offset;

6 scheduling the one or more communications with the receiving unit using the
7 feedback information and the feedback information offset whenever the scheduling
8 of the one or more communications with the receiving unit is to be adjusted using the
9 feedback information offset;

10 scheduling the one or more communications with the receiving unit using the
11 feedback information whenever the scheduling of the one or more communications
12 with the receiving unit is not to be adjusted using the feedback information offset;

13 determining whether to adapt one or more communication links with the
14 receiving unit using the feedback information offset;

15 adapting one or more communication links with the receiving unit using the
16 feedback information and the feedback information offset whenever the one or more
17 communication links with the receiving unit are to be adapted using the feedback
18 information offset; and

19 adapting one or more communication links with the receiving unit using the
20 feedback information whenever the one or more communication links with the
21 receiving unit are not to be adapted using the feedback information offset.

1 21. The method as recited in claim 1, wherein the step of adjusting one or more
2 communications with the receiving unit based on the feedback information and the
3 feedback information offset comprises the steps of:

4 determining whether to use the feedback information offset or a previous
5 feedback information offset;

6 adjusting the one or more communications with the receiving unit based on
7 the feedback information whenever the feedback information offset is not to be used;

8 adjusting the one or more communications with the receiving unit based on
9 the feedback information and the feedback information offset whenever the feedback
10 information offset is to be used; and

11 adjusting the one or more communications with the receiving unit based on
12 the feedback information and the previous feedback information offset whenever the
13 previous feedback information offset is to be used. ^

1 22. The method as recited in claim 21, wherein a modified feedback information
2 offset is used instead of the feedback information offset.

1 23. The method as recited in claim 22, wherein the modified feedback information
2 offset has a value of zero, an absolute value of the feedback information offset or a
3 negative of the absolute value of the feedback information offset.

1 24. A computer program embodied on a computer readable medium for adjusting
2 one or more communications with a receiving unit in a wireless communication
3 network, the computer program comprising:

4 a code segment for receiving feedback information relating to the receiving
5 unit;

6 a code segment for determining a feedback information offset for the
7 receiving unit; and

8 a code segment for adjusting the one or more communications with the
9 receiving unit based on the feedback information and the feedback information
10 offset.

1 25. An apparatus for adjusting one or more communications with a receiving unit
2 in a wireless communication network comprising:

3 a processor that accesses feedback information related to the receiving unit,
4 determines a feedback information offset for the receiving unit and provides one or
5 more instructions to adjust the one or more communications with the receiving unit
6 based on the feedback information and the feedback information offset.

1 26. An apparatus for adjusting one or more communications with a receiving unit
2 in a wireless communication network comprising:

3 a receiver that receives feedback information relating to the receiving unit;

4 a feedback information processor communicably coupled to the receiver, the
5 feedback information processor determining a feedback information offset for the
6 receiving unit and adjusting the one or more communications with the receiving unit
7 based on the feedback information and the feedback information offset; and

8 a transmitter communicably coupled to the feedback information processor
9 that transmits the one or more communications to the receiving unit.

1 27. The apparatus as recited in claim 26, wherein the receiver, the feedback
2 information processor and the transmitter are part of a base station.

1 28. A system for adjusting one or more communications in a wireless
2 communication network comprising:

3 one or more receiving units, each receiving unit comprising a receiver, a
4 feedback information estimator communicably coupled to the receiver and a
5 transmitter communicably coupled to the feedback information estimator;

6 one or more base stations communicably coupled to the one or more
7 receiving unit, each base station comprising a receiver that receives feedback
8 information relating to the receiving unit, a feedback information processor
9 communicably coupled to the receiver, the feedback information processor
10 determining a feedback information offset for the receiving unit and adjusting the one

11 or more communications with the receiving unit based on the feedback information
12 and the feedback information offset, and a transmitter communicably coupled to the
13 feedback information processor that transmits the one or more communications to
14 the receiving unit.

1 29. The system as recited in claim 28, further comprising a transmit processing
2 node communicably coupled to the one or more base stations.

1 30. The system as recited in claim 29, wherein the transmit processing node is a
2 radio network controller.

1 31. The system as recited in claim 29, further comprising an interface/routing
2 node communicably coupled to the transmit processing node.

1 32. The system as recited in claim 31, wherein the interface/routing node is a
2 mobile switching center or public data switch node.